

REMARKS

In the Office action dated October 16, 2001, the Examiner rejected Claims 1 - 150 under 35 U.S.C. § 112, second paragraph as being indefinite. He also rejected Claims 1, 4, 17, 138, 142-145, and 149-150 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,774,614 ("the '614 Patent"). The Examiner additionally rejected Claims 2-3, 5-13, 15-16, 18-57, 75-94, 115-137 and 139-148 under 35 U.S.C. § 103(a) as being obvious in light of the '614 Patent.

Claims 14, 85 and 146

The Examiner stated that Claims 14, 85, and 146 would be allowable if re-written in independent form including all of the limitations of the base claim and any intervening claims. See Office action, paragraph 9 (page 7.) The applicants have amended the claims in conformity with the Examiner's suggestions and respectfully request that the amended claims be allowed.

Claims 58 - 74 and 95 - 114

The Examiner stated that Claims 58-74 and 95-114 would be allowable if re-written or amended to overcome the rejections under 35 U.S.C. § 112, second paragraph. See Office action, paragraph 10 (page 7.) The Examiner argues that the claims at issue are mis-descriptive with respect to the specification and drawings; and the Examiner asserts that the specification allegedly describes the main body region as having only electrical components and not also optoelectronic devices. See Office action, paragraph 4 (pages 2-3).

The second paragraph of 35 U.S.C. § 112 is directed to a requirement for the claims. It provides that the specification shall conclude with "one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." There are two separate requirements set forth in this paragraph: (1) the claims must set forth the subject matter that applicants regard as their invention; and (2) the claims must particularly point out and distinctly define the meets and bounds of the subject matter that will be protected by the patent grant. See Manual of Patent Examining Procedure § 2171.

To resolve this issue, the applicants have amended the claims in conformity with the Examiner's suggestions and respectfully request that the amended claims be allowed. Now, there are no claims directed to a main body region having one or more optoelectronic devices.

Claims 18 - 37, 38 - 57 and 115 - 137

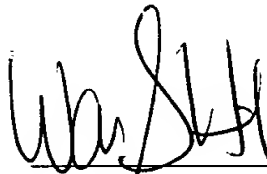
The applicants cancel claims 18-37, 38-57 and 115-137.

Marked-Up Version

A marked-up version of the claims showing all of the changes relative to the previous version of the claims is attached hereto as Attachment A.

If you have any questions, please do not hesitate to call at (650) 213-0321.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Warren Heit', written over a horizontal line.

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ATTACHMENT A

1. (Amended) A flexible printed circuit board comprising:
 - a) a main body region orientated in a first direction having at least one electrical [or optoelectronic] device;
 - b) a plurality of electrical contact pads integrated into the main body region, where the electrical contact pads are capable of connecting the flexible printed circuit board to an external environment;
 - c) a buckle region extending from one end of the main body region; [and]
 - d) a head region extending from one end of the buckle region, and where the head region is orientated so that it is at an angle relative to the direction of the main body region[.];
and
 - e) a spacer that is adapted to the head region of the flexible printed circuit board, wherein the spacer is capable of acting as a mounting surface for at least one optoelectronic device.
2. An apparatus as in claim 1, wherein the external environment is a second circuit board.
3. An apparatus as in claim 1, wherein at least one optoelectronic device comprises a photodetector.
4. An apparatus as in claim 1, wherein at least one optoelectronic device comprises a vertical cavity surface emitting laser.
5. An apparatus as in claim 4, wherein the vertical cavity surface emitting laser comprises an oxide vertical cavity surface emitting laser.
6. An apparatus as in claim 1, further comprising at least one optoelectronic device adapted to the head region.
7. An apparatus as in claim 6, wherein at least one optoelectronic device comprises a photodetector.

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8. An apparatus as in claim 6, wherein at least one optoelectronic device comprises a vertical cavity surface emitting laser.

9. An apparatus as in claim 8, wherein the vertical cavity surface emitting laser comprises an oxide vertical cavity surface emitting laser.

10. An apparatus as in claim 1, wherein the electrical contact pads are adapted to a first surface or a second surface of the main body region.

11. An apparatus as in claim 1, wherein the electrical contact pads are ball grid arrays.

12. An apparatus as in claim 1, wherein the electrical contact pads are solder balls.

13. An apparatus as in claim 1, wherein the electrical contact pads are land-grid arrays.

✓
Cancel claim 14.

15. An apparatus as in claim 1, further comprising an optical power control system adapted to the head region of the flexible printed circuit board.

16. An apparatus as in claim 1, further comprising a driver or amplifier chip adapted to the head region or main body region of the flexible printed circuit board.

17. An apparatus as in claim 1, further comprising a plurality of conducting lines that are adapted to the head region, the buckle region and the main body region.

✓
Cancel claims 18 – 57.

58. (Amended) A flexible printed circuit board comprising:

a) a main body region orientated in a first direction having at least one electrical [or optoelectronic] component;

b) a buckle region extending from one end of the main body region;

c) a head region extending from one end of the buckle region, and where the head region is orientated so that it is at an angle relative to the direction of the main body region; and

d) a height adjuster adapted along at least a portion of a surface of the head region of the flexible printed circuit board.

✓
Cancel claims 59 – 61.

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62. An apparatus as in claim 58, further comprising at least one optoelectronic device adapted to the head region.

63. An apparatus as in claim 62, wherein at least one optoelectronic device comprises a photodetector.

64. An apparatus as in claim 62, wherein at least one optoelectronic device comprises a vertical cavity surface emitting laser.

65. An apparatus as in claim 64, wherein the vertical cavity surface emitting laser comprises an oxide vertical cavity surface emitting laser.

66. An apparatus as in claim 58, wherein the head region is orientated in such a manner so that it is substantially perpendicular to the direction of the main body region.

67. An apparatus as in claim 58, wherein the height adjuster is capable of changing the height of at least one electrical or optoelectronic component on the head region.

68. An apparatus as in claim 58, further comprising wire leads adapted to the main body region.

69. An apparatus as in claim 58, further comprising electrical contact pads integrated into the main body region, wherein the electrical contact pads are capable of connecting the flexible printed circuit board to an external environment.

70. An apparatus as in claim 69, wherein the external environment comprises a circuit board.

71. An apparatus as in claim 69, wherein the electrical contact pads are adapted to a first surface or a second surface of the main body region.

72. An apparatus as in claim 69, wherein the electrical contact pads are ball grid arrays.

73. An apparatus as in claim 69, wherein the electrical contact pads are solder balls.

74. An apparatus as in claim 69, wherein the electrical contact pads are land-grid arrays.

75. (Amended) A flexible printed circuit board comprising:

- a) a main body region orientated in a first direction having at least one electrical [or optoelectronic] component;
- b) a buckle region extending from one end of the main body region;
- c) a head region extending from one end of the buckle region, and where the head region is orientated so that it is at an angle relative to the direction of the main body region;
- d) a heat spreader adapted along at least a portion of a surface of the head region of the flexible printed circuit board; [and]
- e) a window in the head region of the flexible printed circuit board, the window capable of providing access to the heat spreader[.]; and
- f) an optical power control system adapted to the head region of the flexible printed circuit board.

Delete claims 76 – 78.

79. An apparatus as in claim 75, further comprising at least one optoelectronic device adapted to the heat spreader in such a manner that at least one optoelectronic device is accessible through the window in the flexible printed circuit board.

80. An apparatus as in claim 79, wherein at least one optoelectronic device comprises a photodetector.

81. An apparatus as in claim 79, wherein at least one optoelectronic device comprises a vertical cavity surface emitting laser.

82. An apparatus as in claim 81, wherein the vertical cavity surface emitting laser comprises an oxide vertical cavity surface emitting laser.

83. An apparatus as in claim 75, wherein the heat spreader provides mechanical rigidity or stiffness to the head region of the flexible printed circuit board.

84. An apparatus as in claim 75, wherein the head region is orientated in such a manner so that it is substantially perpendicular to the direction of the main body region.

Cancel claim 85.

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86. An apparatus as in claim 75, further comprising a driver or amplifier chip adapted to the head region or main body region of the flexible printed circuit board.

87. An apparatus as in claim 75, further comprising a plurality of conducting lines that are adapted to the head region, the buckle region and the main body region.

88. An apparatus as in claim 75, further comprising wire leads adapted to the main body region.

89. An apparatus as in claim 75, further comprising electrical contact pads integrated into the main body region, wherein the electrical contact pads capable of connecting the flexible printed circuit board to an external environment.

90. An apparatus as in claim 89, wherein the external environment comprises a circuit board.

91. An apparatus as in claim 89, wherein the electrical contact pads are adapted to a first surface or a second surface of the main body region.

92. An apparatus as in claim 89, wherein the electrical contact pads are ball grid arrays.

93. An apparatus as in claim 89, wherein the electrical contact pads are solder balls.

94. An apparatus as in claim 89, wherein the electrical contact pads are land-grid arrays.

95. (Amended) A flexible printed circuit board comprising:

a) a main body region orientated in a first direction having at least one electrical [or optoelectronic] component;

b) a buckle region extending from one end of the main body region;

c) a head region extending from one end of the buckle region, and where the head region is orientated so that it is at an angle relative to the direction of the main body region;

d) a height adjuster adapted along at least a portion of a surface of the head region of the flexible printed circuit board; and

e) a window in the head region of the flexible printed circuit board, the window capable of providing access to the height adjuster.

Cancel claims 96 – 98.

99. An apparatus as in claim 95, further comprising at least one optoelectronic device adapted to the height adjuster in such a manner that at least one optoelectronic device is accessible through the window in the flexible printed circuit board.

100. An apparatus as in claim 99, wherein at least one optoelectronic device comprises a photodetector.

101. An apparatus as in claim 99, wherein at least one optoelectronic device comprises a vertical cavity surface emitting laser.

102. An apparatus as in claim 101, wherein the vertical cavity surface emitting laser comprises an oxide vertical cavity surface emitting laser.

103. An apparatus as in claim 95, wherein the height adjuster provides mechanical rigidity or stiffness to the head region of the flexible printed circuit board.

104. An apparatus as in claim 95, wherein the head region is orientated in such a manner so that it is substantially perpendicular to the direction of the main body region.

105. An apparatus as in claim 95, further comprising an optical power control system adapted to the head region of the flexible printed circuit board.

106. An apparatus as in claim 95, further comprising a driver or amplifier chip adapted to the head region or main body region of the flexible printed circuit board.

107. An apparatus as in claim 95, further comprising a plurality of conducting lines that are adapted to the head region, the buckle region and the main body region.

108. An apparatus as in claim 95, further comprising wire leads adapted to the main body region.

109. An apparatus as in claim 95, further comprising electrical contact pads integrated into the main body region, wherein the electrical contact pads capable of connecting the flexible printed circuit board to an external environment.

110. An apparatus as in claim 109, wherein the external environment comprises a second circuit board.

111. An apparatus as in claim 109, wherein the electrical contact pads are adapted to a first surface or a second surface of the main body region.

112. An apparatus as in claim 109, wherein the electrical contact pads are ball grid arrays.

113. An apparatus as in claim 109, wherein the electrical contact pads are solder balls.

114. An apparatus as in claim 109, wherein the electrical contact pads are land-grid arrays.

Cancel claims 115 – 137.

138. (Amended) A flexible printed circuit board comprising:

- a) a substantially rectangular main body region with two short sides and two long sides, the main body region having at least one electrical [or optoelectronic] device adapted thereto;
- b) a buckle region extending from one of the short sides of the main body region;
- c) a head region extending from the buckle region in a planar orientation substantially perpendicular to the main body region; [and]
- d) a head region having at least one optoelectronic device thereon, the optoelectronic device situated substantially along a longitudinal axis of the flexible printed circuit board[.]; and
- e) a spacer that is adapted to the head region of the flexible printed circuit board, wherein the spacer is capable of functioning as a mounting surface for the optoelectronic devices.

139. An apparatus as in claim 138, wherein at least one optoelectronic device comprises a photodetector.

140. An apparatus as in claim 138, wherein at least one optoelectronic device comprises a vertical cavity surface emitting laser.

141. An apparatus as in claim 140, wherein the vertical cavity surface emitting laser comprises an oxide vertical cavity surface emitting laser.

Cancel claims 142 – 146.

147. An apparatus as in claim 138, further comprising an optical power control system adapted to the flexible printed circuit board.

148. An apparatus as in claim 138, further comprising a driver or amplifier chip adapted to the head region or the main body region of the flexible printed circuit board.

149. An apparatus as in claim 138, further comprising a plurality of conducting lines that are adapted to the head region, the buckle region and the main body region.

150. An apparatus as in claim 138, further comprising wire leads adapted to the main body region.